CLAIMS

1   A control system for supplying a control signal (c) to a controlled apparatus (P), the system comprising:

an error generation means (3) operable to produce an error signal (e) from a feedback value (F) relating to a measured operating parameter of a controlled apparatus (1, P), and a required value (R) relating to a desired operating parameter value of the controlled apparatus (1, P); and

a controller (4) operable to receive the error signal (e) and a gain signal (k), and to output a control signal (c) in dependence upon the values thereof,

wherein a gain selection means (6) is provided, which gain selection means is operable to receive the error signal (e) and to output a gain signal (k) to the controller (4) in dependence upon the value of the error signal (e).

2   A system as claimed in claim 1, wherein the controller (4) is operable to output a signal equivalent to the error signal multiplied by the gain signal.

3   A system as claimed in claim 1, wherein the error signal (e) equals the difference between the required value (R) and the feedback value (F).

4   A system as claimed in claim 1, wherein a filter means (8) is provided which is operable to filter the error signal (e) and to supply a filtered error signal to the gain selection means (6) in place of the error signal.

5   A system as claimed in claim 1, wherein a disturbance compensation means (10, 12) is provided which is operable to receive an input value relating to at least one other parameter value of the controlled apparatus, and to receive the error signal, and to produce a compensated error signal in dependence upon the input value and the error signal, and to supply the compensated error signal to the filter means or the gain selection means (6) in place of the error signal.

6   A system as claimed in claim 5, wherein the disturbance compensation means (10, 12) comprises a lookup table (10) for receiving the input value, and a multiplier (12) for receiving a compensation value from the lookup table, and for multiplying the error signal by the compensation value to produce the compensated error signal.

7   A method for controlling a controlled apparatus having a measured operating parameter, the method comprising:

generating an error signal (e) from a feedback value (F) relating to a measured operating parameter value of a controlled apparatus (I, P), and a required value (R) relating to a desired value of the operating parameter of the controlled apparatus (I, P); and

generating a control signal (C) in dependence upon the error signal (e) and a received gain signal (K),

wherein the gain signal is selected in dependence upon the error signal.

8   A method as claimed in claim 7, wherein the control signal is equivalent to the error signal multiplied by the gain signal.

9   A method as claimed in claim 7, wherein the error signal (e) equals the difference between the required value (R) and the feedback value (F).

10   A method as claimed in claim 7, wherein the error signal (e) is filtered and a filtered error signal is used to select the gain signal (6) in place of the error signal.

11   A method as claimed in claim 7, wherein a compensated error signal is produced using a disturbance compensation means (10, 12) which is operable to receive an input value relating to at least one other parameter value of the controlled apparatus, and to receive the error signal, and to produce the compensated error signal in dependence upon the input value and the error signal, the compensated error signal being supplied in place of the error signal.

12   A method as claimed in claim 11, wherein the disturbance compensation means (10, 12) comprises a lookup table (10) for receiving the input value, and a multiplier (12) for receiving a compensation value from the lookup table, and for multiplying the error signal by the compensation value to produce the compensated error signal.

13   A gas turbine engine controller including a control system as claimed in claim 1.

14   A controller as claimed in claim 13, wherein the measured operating parameter is temperature.

15   A method of controlling a gas turbine engine including a method as claimed in claim 7.

16   A method as claimed in claim 15, wherein the measured operating parameter is temperature.